



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

11/1

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,071	12/23/2003	Robert L. Horn	A7995.0023/P023	7430
24998	7590	12/19/2005	EXAMINER	
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP 2101 L Street, NW Washington, DC 20037			MOAZZAMI, NASSER G	
			ART UNIT	PAPER NUMBER
			2187	

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/743,071	HORN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Nasser G. Moazzami	2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### **Status**

- 1) Responsive to communication(s) filed on 23 December 2003.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### **Disposition of Claims**

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2,4-9,11,12 and 16-20 is/are rejected.
- 7) Claim(s) 3,10 and 13-15 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### **Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### **Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### **Attachment(s)**

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>12/23/2003</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

**DETAILED ACTION**

***Information Disclosure Statement***

1. Information Disclosure Statement submitted by applicant has been considered by examiner. See attached PTO-1449.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2, 7, 16 and 18-20 are rejected under 35 U.S.C. 102(a) as being anticipated by Applicant Admitted Prior Art (AAPA).

As per claims 1, 7, 16, and 18-20, AAPA discloses a method for operating a storage volume, comprising: establishing a profile for the storage volume; while accepting and executing a host command for said storage volume; collecting statistical data related to said storage volume; and analyzing said statistical data to determine whether a performance of said storage volume meets a goal; if said goal is not met,

modifying said profile, the statistical data and a current state of said profile to create a new state of said profile; and modifying said storage volume to be consistent with the new state of said profile **[storage is monitored by a data collection to evaluate system performance and compare the current performance to the required output (page 2, paragraph 0004); the statistical data gathered by the collection system for achieving the desired quality of service (page 2, paragraph 0004); dynamically modifying parameters, wherein the parameters includes quality of service parameters (page 3, paragraph 0007)].**

As per claim 2, AAPA discloses that said profile comprises information related to at least one of: a size of the storage volume; a RAID type identifier associated with clusters of the storage volume; and a preferred location for clusters of the storage volume **[clusters may be assigned to a different RAID architecture (page 2, paragraph 0003); QOS and SLA (page 2, paragraph 0004-0007)].**

4. Claims 1-2, 4-9, 11-12 and 16-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Koclans (US Patent Application Publication No. 2004/0243699).

As per claims 1, 16-20, Koclans discloses a method for operating a storage volume, comprising: establishing a profile for the storage volume **[policy rules and metric (page 2, paragraphs 0017 and 0018)];** while accepting and executing a host command for said storage volume: collecting statistical data related to said storage

volume [monitoring aspects of the storage network (page 2, paragraph 0018); monitoring system collects data on the status of all storage resources (page 4, paragraph 0048)]; and analyzing said statistical data to determine whether a performance of said storage volume meets a goal [comparing the aspects of the network against the metric (page 2, paragraph 0018); comparing the metrics to reference information (policy rules) (page 4, paragraph 0051)]; if said goal is not met, modifying said profile, the statistical data and a current state of said profile to create a new state of said profile; and modifying said storage volume to be consistent with the new state of said profile [when an out of bounds condition is detected the storage network is automatically reconfigured (page 2, paragraph 0018); if any metrics is determined to be out of bounds, a provisioning change is initiated (page 4, paragraph 0052)].

As per claim 2, Koclans discloses that said profile comprises information related to at least one of: a size of the storage volume; a RAID type identifier associated with clusters of the storage volume; and a preferred location for clusters of the storage volume [storage devices are automatically reconfigured to meet capacity, bandwidth and connectivity demands (page 3, paragraph 0041); obtaining size requirement and provisioning of a particular RAID type (page 5, paragraph 0060)].

As per claims 4-6, Koclans discloses that said profile is established using a predictive algorithm; said predictive algorithm is a function of a quality of service

requirement for the storage volume and said predictive algorithm is also a function of at least one of: a redundancy requirement for the storage volume; a size of the storage volume; a number of storage devices in the storage volume; a predicted read activity that will likely address the volume; a predicted write activity that will likely address the volume; an amount of data likely to be read or written to the volume; and a performance expectation for the volume **[desired options for allocation and reconfiguration (page 6, paragraphs 0063-0070)]**.

As claim 7, Koclaines discloses that the step of establishing a profile comprises storing said profile in a memory **[the policy rules are maintained in a policy rules database (page 4, paragraph 0056)]**.

As per claim 8, Koclaines discloses that said step of collecting statistical data comprises collecting at least one of a following statistical components: a total number of read commands processed; a total number of write commands processed; a total number of times a command queue for holding pending read or write commands has queue length which coincides with one of a plurality of queue length ranges; and a total number of times a latency for processing a read or write command coincides with one of a plurality of latency ranges **[response time and I/O rates (page 7, paragraph 0082)]**.

As per claim 9, Koclaines discloses that said step of collecting statistical data comprises collecting at least one of a following statistical components: a total number of

sectors read; and a total number of sectors written [**Insufficient Capacity to meet the provisioning request (page 5, paragraph 0060)**].

As per claim 11, Koclans discloses that said step of collecting statistical data comprises forming an I/O density histogram [**snapshot volume (page 7, paragraph 0077)**].

As per claim 12, Koclans discloses that said step of modifying said profile comprises: changing a RAID type of a cluster to optimize a frequently performed operation [**data protection type (page 5, paragraph 0060)**].

#### ***Allowable Subject Matter***

5. Claims 3, 10, and 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached PTO-892.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nasser G. Moazzami whose telephone number is (571) 272-4195. The examiner can normally be reached on 7:00AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



NASSER MOAZZAMI  
PRIMARY EXAMINER

12/07/2005